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PRÉCIS:

Sequencing of an African-American prostate cancer cohort identified ERF as a tumor suppressor in prostate cancer and shows that increasing ethnic diversity enhances the discovery of potential cancer drivers.
Secondary Somatic Mutations Restoring RAD51C and RAD51D Associated with Acquired Resistance to the PARP Inhibitor Rucaparib in High-Grade Ovarian Carcinoma 984


Précis: In patients with high-grade ovarian carcinoma treated with the PARP inhibitor rucaparib, secondary reversion mutations in HR genes restore the open reading frame and HR activity to confer resistance. See article, p. 937

Analysis of Circulating Cell-Free DNA Identifies Multicolon Heterogeneity of BRCA2 Reversion Mutations Associated with Resistance to PARP Inhibitors 999


Précis: Multicolon BRCA2 reversion mutations were detected in circulating cell-free DNA from two patients with metastatic prostate cancer after PARP inhibitor treatment, suggesting a mechanism of resistance. See commentary, p. 937

Circulating Cell-Free DNA to Guide Prostate Cancer Treatment With PARP Inhibition 1006


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PARP inhibitors (PARPi) have demonstrated activity in patients with mutations in homologous recombination (HR) genes such as BRCA1 and BRCA2. Three related studies identified HR gene reversion mutations that confer resistance to PARPi. Kondrashova and colleagues discovered secondary reversion mutations in BRCA1, RAD51C, and RAD51D in patients with PARPi-resistant ovarian cancer. Similarly, Quigley, Alumkal, and colleagues identified BRCA2 reversion mutations associated with PARPi resistance in circulating cell-free DNA (cfDNA) from two patients with prostate cancer. Finally, Goodall, Mateo, and colleagues found secondary reversion mutations in BRCA2 and PALB2 in cfDNA from patients with PARPi-resistant metastatic prostate cancer. Together, these studies demonstrate that HR gene reversion mutations can promote resistance to PARPi. For details, please see the article by Kondrashova and colleagues on page 984, the article by Quigley, Alumkal, and colleagues on page 999, and the article by Goodall, Mateo, and colleagues on page 1006.